

We claim:

1. A method for producing a transgenic plant having increased plant height, number of branches, number of seed pods and/or seed production compared to a non-transgenic plant, and/or quicker flowering or later senescence compared to a non-transgenic plant, comprising transforming a plant with a vector including a PERK nucleic acid molecule or a nucleic acid molecule having PERK activity.

2. A method of producing a genetically transformed plant which expresses a PERK polypeptide or a polypeptide having PERK activity, the plant having increased plant height, number of branches, number of seed pods and/or seed production, compared to wild-type plants, and/or quicker flowering or later senescence compared to a non-transgenic plant, comprising:

- (a) cloning or synthesizing a PERK nucleic acid molecule or nucleic acid molecule having PERK activity;
- (b) inserting the nucleic acid molecule in a vector so that the nucleic acid molecule is operably linked to a promoter;
- (c) inserting the vector into a plant cell or plant seed;
- (d) regenerating the plant from the plant cell or plant seed, wherein plant height, number of branches, number of seed pods and/or seed production compared to wild-type plants in the plant are increased or wherein the plant has quicker flowering or later senescence.

3. The method of claim 1 or 2, wherein the isolated nucleic acid molecule encoding a PERK polypeptide or polypeptide having PERK activity comprises a nucleic acid molecule selected from the group consisting of:

- a nucleic acid molecule that hybridizes to a nucleic acid molecule consisting of all or part of [SEQ ID NO:1], or a complement thereof under low, moderate or high stringency hybridization conditions;

d) a nucleic acid molecule degenerate with respect to (a), wherein the nucleic molecule encodes a PERK polypeptide or a polypeptide having PERK activity.

4. The method of claim 1 or 2, wherein the nucleic acid molecule encoding a PERK polypeptide, or a polypeptide having PERK activity, comprises a nucleic acid molecule selected from the group consisting of:

- (a) the nucleic acid molecule of the coding strand shown in [SEQ ID NO:1], or a complement thereof;
- (b) a nucleic acid molecule encoding the same amino acid sequence as a nucleotide sequence of (a); and
- (c) a nucleic acid molecule having at least 17% identity with the nucleotide sequence of (a) and which encodes a PERK polypeptide or a polypeptide having PERK activity

5. The method of claim 1 or 2, wherein the plant is of a species selected from the group consisting of alfalfa, almond, apple, apricot, arabidopsis, artichoke, atriplex, avocado, barley, beet, birch, brassica, cabbage, cacao, cantalope, carnations, castorbean, cauliflower, celery, clover, coffee, corn, cotton, cucumber, garlic, grape, grapefruit, hemp, hops, lettuce, maple, melon, mustard, oak, oat, olive, onion, orange, pea, peach, pear, pepper, pine, plum, poplar, potato, prune, radish, rape, rice, roses, rye, salicornia sorghum, soybean, spinach, squash, strawberries, sunflower, sweet corn, tobacco, tomato and wheat.